DETAILED ACTION

1. This Office Action is in response to the amendment filed March 2, 2010. No claims were amended, cancelled or added. Claims 1-39 were previously cancelled and claims 44-56 have been withdrawn from consideration. Thus, claims 40-43 have been considered below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ivri et al. (WO 97/07896) in view of Robertson, et al. (US 5,487,378).

Regarding claim 40, Ivri et al., disclose a method of aerosolizing (nebulizing) a liquid, comprising the steps of forming a vibratable aperture plate (Figure 13A shows an a vibratable aperture plate with a thin shell member) , the aperture plate having a front surface (top) and a rear surface (bottom), the aperture plate being formed to form a plurality of tapered conical-shaped apertures (Figures 6 & 7) extending from the rear surface to the front surface, the plurality of apertures being tapered to narrow from the rear surface to the front surface, the aperture plate (Figure 13A) further being formed to have a dome shape (Figure 13A), mounting the vibratable aperture plate (Figures 2, 13 and 20) upon a support member (26, 166, 230) wherein substantially all of a vibratable portion (thin shell member) of the aperture plate not directly mounted to the support

member (the dome portion forming the thin shell member) comprises the dome shape: providing a fluid (42 in figure 2) at the rear surface of the aperture plate; and vibrating the aperture plate to eject the fluid through the plurality of tapered conical-shaped apertures. See: page 5, line 16 to page 7, line 2.

However, Ivri lacks the specific teaching of electroforming the vibratable aperture plate of palladium or a palladium alloy and the palladium or palladium alloy aperture plate being electroformed to form the plurality of tapered conical-shaped apertures.

Robertson et al. teaches a method of aerosolizing a liquid including the steps of electroforming a metal or metal alloy plate (e.g. nickel; col. 11, lines 22-23) to have apertures which taper smaller going from a back surface to the front surface where the droplets will be released; providing liquid at the rear surface of the plate; and vibrating the plate to eject fluid droplets through the apertures (col. 2, lines 48-64; col. 3 lines, 24-52; col. 11, lines 21-23) and that all surfaces in contact with the liquid may be coated with a protective layer to prevent corrosion. See: col. 11, lines 8-23.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of nebulizing a liquid, as disclosed by Ivri, by electroforming a metal or metal alloy plate, as taught by Robertson, with the dome shape having tapered apertures, as disclosed by Ivri, in order to provide these surfaces with a protective layer to prevent corrosion since these parts are in contact with the liquid in Ivri.

4. Claims 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ivri et al. (WO 97/07896) and Robertson, et al. (US 5,487,378), as applied to claim 1 above, and further in view of Abys et al (4,911,798).

The combined references teach all the limitations of claims 41-42, except the electroforming step being carried out with the aperture plate being palladium cobalt or palladium nickel.

Abys teaches that Palladium metal and alloys are used as protective coatings, are chemically inert, are hard and wear well and do not form oxide surface coatings. Abys specifically teaches that palladium-nickel and palladium-cobalt alloys are advantageous used in electroplating because the plating potential for the pairs of metals (e.g. palladium and nickel) are close together and well removed from the hydrogen evolution potential. Moreover, Abys teaches that typical alloying metals are silver, copper, nickel, cobalt, gold, chromium, manganese, ruthenium, rhodium, platinum and iridium; but specifically teaches that particularly useful are copper, nickel, cobalt and silver with the preferred alloys comprising at least 10 mole percent palladium, remainder copper, nickel, cobalt and/or silver. Other useful alloys are 40, 60 or 80 mole percent palladium, remainder silver, nickel, cobalt and/or silver. See: col. 1, lines 20-43; col. 3, lines 45-62; col. 6, lines 36-45; and claims 1-5 & 9-10.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used palladium-nickel or palladium-cobalt alloys, as taught by Abys, in order to electroform the aperture plate, as taught by Robertson, with a dome shape having tapered apertures therethrough, as disclosed by Ivri, with a protective

layer, using a well known palladium alloy for its art recognized purpose, which is to provide a protective layer using metal alloys that are inert, hard and wear well.

Regarding claim 43, Abys teaches useful alloy metals are 40, 60, or 80 mole percent palladium, remainder silver, nickel, cobalt, and/or silver. Moreover, differences in concentration will not support the patentability of subject matter encompassed by the prior art because it is not inventive to discover the optimum or workable ranges by routine experimentation.

Response to Arguments

5. Applicant's arguments filed March 2, 2010 have been fully considered but they are not persuasive.

6. Applicant argues on page 8, fourth paragraph, that the Office Action does not point to any portion of Robertson that discloses an aperture plate made of palladium or a palladium alloy and that neither Ivri nor Robertson mentions palladium or a palladium alloy. Therefore, applicant argues that Ivri and Robertson, even in combination, do not teach or suggest each and every limitation of claim 40, and the Office Action has not made out a prima-facie case of obviousness with respect to claim 40.

However the examiner respectfully disagrees as it is proper to take into consideration not only the teachings of the prior art, but also the level of ordinary skill in the art. In re Luck, 476 F. 2d 650, 177 USPQ 523 (CCPA 1973). Specifically, those of ordinary skill in the art are presumed to have some knowledge of the art apart from what is expressly disclosed in the references. In re Jacoby, 309 F.2d 513, 135 USPQ 317 (CCPA 1962).

In the instant case Ivri was used to disclose the aperture plate and Robertson teaches metals and metal alloys such as nickel for electroforming a nozzle array and specifically teaches using nickel. Palladium and palladium alloys are well known materials for electroforming, as admitted by applicant on page 12, line 19 to page 13, line 1. Moreover, a skilled artisan would readily recognize that Palladium is in the same Group on the periodic table as nickel and would therefore be expected to have similar electroforming properties because elements in a group have similar configurations of the outermost electron shells and most chemical properties are dominated by the orbital location of the outermost electron.

Therefore, using palladium or a palladium alloy, which have been known in the art for electroforming, would be obvious to the skilled artisan in light of the "electroformed metal or metal alloy such as nickel" teaching of Robertson, as this would be the simple substitution of one known element for another that are in the same group or family in the periodic table.

Therefore, the rejection has been MAINTAINED.

7. Applicant argues on page 9, second full paragraph, that electroplating is not the same as electroforming, and that Applicants do not use palladium or a palladium alloy to simply form a protective layer. Applicants electroform the entire aperture plate of palladium or a palladium alloy. Therefore, applicants argue that the combined references, even in combination, do not teach or suggest all of the limitations of claims 41-43, and the Office Action has not provided a rationale to explain why one of skill in the art at the time the invention was made would have chosen to electroform the entire

aperture plate from palladium or a palladium alloy, rather than simply using electroplating as is described by Abys.

The examiner agrees that electroforming is different than electroplating in that electroforming is a metal forming process that forms thin parts through the **electroplating process**. (Bolding added for emphasis). The part is produced by plating a metal skin onto a base form, known as a mandrel, which is removed after plating. This process differs from electroplating in that the plating is much thicker and can exist as a self-supporting structure when the mandrel is removed. However, the examiner asserts that the electroformed material would have the same metal external surface as an electroplated material (i.e. a metal or metal alloy outer surface).

Moreover, this rejection was based upon the combination of references and Robertson was used to teach electroforming. If fact, Abys was only used to teach the particular metals palladium-cobalt and palladium-nickel and Abys gives specific reasons for using these metals (i.e. palladium-nickel and palladium-cobalt alloys are advantageous used in electroplating because the plating potential for the pairs of metals (e.g. palladium and nickel) are close together and well removed from the hydrogen evolution potential).

Therefore, applicants arguments have not been found convincing and the rejection has been MAINTAINED.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLINTON OSTRUP whose telephone number is (571)272-5559. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on (571) 272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Clinton Ostrup/
Examiner, Art Unit 3771

/Justine R Yu/
Supervisory Patent Examiner, Art Unit 3771